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ART 34Claims

1. An agitation apparatus comprising generating means for generating alternating pressure waves, a first fluid flow path with an inlet/outlet port and a second fluid flow path with an inlet/outlet port, the area adjacent the inlet/outlet ports forming an agitation region, wherein the generating means is arranged to generate a first alternating pressure wave along the first fluid flow path and a second alternating pressure wave along the second fluid flow path, the first and second pressure waves being substantially in anti-phase with one another.
2. An agitation apparatus according to claim 1 wherein each flow path comprises a cavity.
3. An agitation apparatus according to claim 2 wherein the cavity is a resonating cavity.
4. An agitation apparatus according to claim 2 or 3 wherein the cavity in each flow path is of the same volume.
5. An agitation apparatus according to any one of the preceding claims wherein the cavity is directly adjacent to the generating means.
6. An agitation apparatus according to any one of claims 2 to 5 wherein each of the flow paths consists of a cavity with a port extending directly from it.
7. An agitation apparatus according to any one of claims 1 to 4 wherein the cavity is located away from the generating means and is joined to the generating means by a duct.

8. An agitation apparatus according to any one of the preceding claims wherein the generating means comprises a diaphragm, a first side of the diaphragm communicating with the first flow path and a second side of the diaphragm communicating with the second flow path whereby to generate the first and second alternating pressure waves.

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9. An agitation apparatus according to claim 8 wherein the generating means further comprises a driver for driving the diaphragm and wherein the driver is housed within one of the flow paths.

10 10. An agitation apparatus according to claim 8 wherein the generating means further comprises two drivers for driving the diaphragm, and wherein the drivers are mounted on each side of the diaphragm, a first of the drivers being housed in the first flow path and a second of the drivers being housed within the second flow path.

15 11. An agitation apparatus according to any one of claims 1 to 7 wherein the generating means comprises two diaphragms, a first of the diaphragms communicating with the first flow path and the second of the diaphragms communicating with the second flow path, and a driver for driving the diaphragms which is positioned between the diaphragms.

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12. An agitation apparatus according to any one of the preceding claims wherein the generating means comprise a coil and a magnet, one of the coil or magnet being movable with respect to the other, the coil receiving an alternating signal for energising the coil.

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13. An agitation apparatus according to claim 12 wherein the coil receives a signal at the frequency of the mains supply.

14. An agitation apparatus according to claim 12 further comprising a signal source  
30 for generating an alternating signal for supplying to the coil.

15. An agitation apparatus according to any one of claims 12 to 14 wherein the generating means comprises a loudspeaker.

5 16. An agitation apparatus according to any one of claims 1 to 11 wherein the generating means is driven by airflow.

10 17. An agitation apparatus according to claim 16 further comprising a turbine for positioning in an airflow path to the vacuum cleaner and a coupling for coupling the output of the turbine to the generating means.

18. An agitation apparatus according to any one of the preceding claims wherein the generating means generates a pressure wave with a frequency in the range 0-200Hz.

15 19. An agitation apparatus according to claim 18 wherein the frequency of operation of the generating means is variable.

20 20. An agitation apparatus according to claim 19 wherein the frequency of the generating means is manually adjustable by a user of the apparatus.

21. An agitation apparatus according to claim 19 further comprising detection means for detecting the type of floor surface and wherein the frequency of operation of the generating means is variable according to the detected type of floor surface.

25 22. A cleaning head comprising a housing having a sole plate for travelling across a surface and an agitation apparatus according to any one of the preceding claims.

23. A cleaning head according to claim 22 in the form of a cleaning head for a vacuum cleaner, wherein the housing is a suction housing having a suction outlet for

connecting to a source of suction and the ports of the agitation apparatus are spaced apart along the housing.

24. A cleaning head according to claim 22 or 23 wherein the ports are directed  
5 downwardly towards the sole plate.

25. A cleaning head according to any one of claims 22 to 24 wherein the ports are inclined with respect to the sole plate of the cleaning head.

10 26. A cleaning head according to any one of claims 22 to 25, comprising a plurality of the agitation apparatus.

27. A cleaning head according to claim 26 wherein the agitation apparatus are spaced along the longitudinal axis of the cleaning head.

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28. A cleaning head according to any one of claims 22 to 27 in the form of a tool for fitting to a wand.

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29. A vacuum cleaner comprising a main body and a cleaning head, wherein part of the agitation apparatus according to any one of claims 1 to 21 is housed in or on the main body of the vacuum cleaner and ducting connects the part of the agitation apparatus in or on the main body to that part of the agitation apparatus on the cleaning head.

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30. An agitation apparatus for use with a vacuum cleaner having a cleaning head, comprising generating means for generating alternating pressure waves, a first fluid flow path with an inlet/outlet port and a second fluid flow path with an inlet/outlet port, the inlet/outlet ports joining the flow paths to the space within the cleaning head, wherein the generating means is arranged to generate a first alternating pressure wave along the  
30 first fluid flow path and a second alternating pressure wave along the second fluid flow

path, the first and second pressure waves being substantially in anti-phase with one another.

31. An agitation apparatus, a cleaning head or a vacuum cleaner substantially as  
5 described herein with reference to the accompanying drawings.

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